NOTES ICHTYOLOGIQUES

FIRST RECORD OF *VALENCIA LETOURNEUXI* (SAUVAGE, 1880) IN PELOPONNESE (GREECE) AND REMARKS ON THE MEDITERRANEAN FAMILY VALENCIIDAE (CYPRINODONTIFORMES).

Pier Giorgio BIANCO, Dipartimento Scienze Ambientali, Università, 67100 L'Aquila, ITALY ; and **Robert Rush MILLER**, Museum of Zoology, Michigan University, Ann Arbor 48109, USA.

ABSTRACT. - There are only two known valid allopatric specis of Valenciidae, a monogeneric Mediterranean family of cyprinodontiform fishes recently erected by Parenti : *Valencia letourneuxi* and *V. hispanica*. The first, now found also in R. Pinios and R. Alfios in Peloponnese, is endemic in western-Greece district. The second is spread only in the Iberian Peninsula, but its detailed distribution is still unclear.

RÉSUMÉ. - Il y a deux espèces allopatriques connues de Valenciidae, famille monogénérique de Cyprinodontiformes méditerranéens récemment reconnue par Parenti : *V. letourneuxi* et *V. hispanica*. La première, retrouvée dans les fleuves Pinios et Alfios (Péloponnèse), est une espèce endémique de la Grèce occidentale. La deuxième est endémique de la Péninsule Ibérique, mais sa distribution actuelle n'est pas claire.

Key-words : Valenciidae, *Valencia letourneuxi*, Peloponnese, Greece, First record.

Originally described from two sites of Corfù island (Sauvage, 1880), *Valencia letourneuxi* (recently rehabilitated by Villwock *et al.*, 1982) has been found in several other localities in W Greece : R. Louros (Stephanidis, 1939), R. Acheron (Stephanidis, 1974), R. Thyamis (Villwock *et al.*, 1982), R. Kalamas and Lefkas island (Economidis, *in litt.)*, L. Butrino in Albania (Oliva, 1965). It was unknown in Peloponnese (Stephanidis, 1971 ; Economidis, *in litt)*. Steinitz (1951) wrongly reported as type locality the island of Crete where no native cyprinodontoid fishes were found during a survey of the senior author on April 1987. Parenti (1981) wrongly cited the species in Italy (Bianco, 1987b).

On April 1987, several Peloponnese rivers (from Pindo to Eurotas) were carefully examined, and *V. letourneuxi* was discovered in two of them : R. Pinios, under the bridge of the road between Stafidokobas and Roupaxi, 5 specimens, 16 April 1987, Bianco leg. (housed in Dipartimento di Scienze Ambientali of L'Aquila University (IZA) n. 8745) ; R. Alfios near Epitalio, 3 specimens, 17 April 1987, Bianco leg. (IZA 87451).

The European distribution of the species is limited to western-Greece : an ichtyogeographic district very rich of endemic elements, placed south of the rivers Aoos (Vjose in Albany) and Sperchios (Bianco, 1986, 1990) (Fig. 1).

The specimens from Peloponnese differ from these of R. Acheron and R. Louros in having, modally, one ray less in the dorsal fin (Table I) : this might be the result of clinal variation.

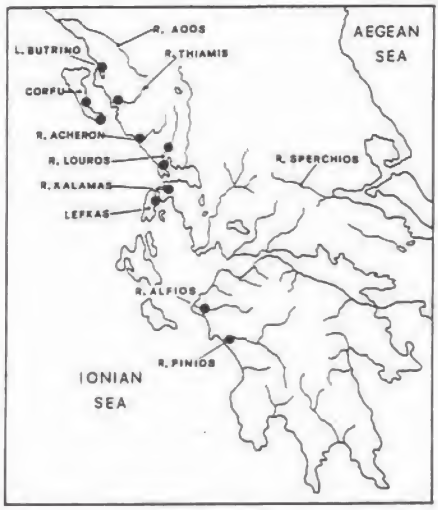

Fig. 1 : Distribution of *Valencia letourneuxi* in western Balkans.

In spite of its salinity tolerance, up to 46 ppm (Bianco, 1987b), the preferential habitat of *V. letourneuxi* is clean, nearly standing temperate freshwater rich in vegetation. It lives either with the minnow *Pseudophoxinus stymphalicus* (Valenciennes, 1844) or introduced *Gambusia* (and locally with other species), but never with the native cyprinodontid *Aphanius fasciatus* (Nardo, 1824) : range of the two species in

Table I : Meristic data in species of the family Valenciidae : n = number of specimens examined ; D = total rays in dorsal fin ; A = total rays in anal fin ; LL = scales on lateral line (from behind the eye up to the caudal fin base) ; CIRC = circumpeduncular scales ; R = range ; CV = usual values (in parentheses frequency of CV). Gill rakers are counted on the external side of first arch.

	n		D	A	LL	CIRC	Gill rakers Lower arm	Gill rakers Upper arm	1st row teeth Upper jaws	1st row teeth Lower jaws
V. letourneuxi										
R. Acheron	62	R	9-11	11-13	28-34	14-16	9-12	0-2	5-12	7-15
		CV	10(79)	12(74)	30-33(80)	15(57)	9-10(74)	1(89)	-	-
R. Louros	28	R	9-11	11-13	29-34	15-16	9-11	1-2	5-16	8-19
		CV	10(57)	12(82)	31-33(83)	15(72)	10-11(89)	2(90)	-	-
Peloponnese	8	R	8-9	12-13	29-32	15-16	9-10	0-1	6-11	6-15
		CV	9(75)	12(63)	-	15(75)	10(63)	1(75)	-	-
V. hispanica	11	R	10-11	12-14	29-33	15-16	10-12	1-2	6-14	11-21
		CV	10(70)	14(55)	29-32(90)	16(70)	11(60)	1(70)	-	-
Fundulus heteroclitus (= V. lozanoi)	15	R	11-12	10-11	37-42	18-22	8-9	1-3	9-17	14-26
		CV	12(62)	10(80)	38-40(80)	18-20(90)	8(87)	2(80)	-	-

Greece seem to be complementary (as showed at least in the R. Ebro, Spain, between *V. hispanica* (Valenciennes, 1846) and *A. iberus* (Valenciennes, 1846) (De Sostoa *et al.*, 1984)). The present disjunct range of the genus *Valencia* (Greece and Iberian Peninsula) might be the result of secondary extinction by incompatibility with species of the genus *Aphanius*.

Valencia letourneuxi, virtually extinct in Corfù Island (the type locality), is in gradual decline at least in R. Acheron and R. Louros, perhaps because of the progressive increase in number of *Gambusia affinis* (Baird & Girard, 1853) (Bianco, pers. obs.). The situation is similar in Peloponnese where only 8 specimens were captured among large samples of *Gambusia*.

Adult females collected in April and in August had full gonads with eggs up to 2.2 mm in diameter. This suggests that the spawning season at least occurs from spring to fall.

Regarding the Iberian species *(V. hispanica)*, its true distribution is still unclear. Several recent reports on biology and distribution of fishes identified as *V. hispanica* in Spain (Hernando, 1975 ; Gomez *et al.*, 1984 ; Arias and Drake, 1986) and Portugal (Coelho *et al.*, 1976) were misidentification for *Fundulus heteroclitus* (Linnaeus, 1758) (Fernandez *et al.*, 1986).

A third species, *Valencia lozanoi* Gomez, Peiro & Sanchez, 1984, has been recently synonymized with *F. heteroclitus* (Fernandez *et al.*, 1986).

Comparisons of meristic characters (Table I), of colour patterns and maximum size reached in the two known species (*V. letourneuxi* and *V. hispanica)*, bring to the following considerations : the main differences between *V. hispanica* and *V. letourneuxi*, separated by Villwock *et al.* (1982) on the basis of genetic evidence, are the modal number of anal fin rays (14 and 12 respectively), and the number of transverse stripes on the male caudal fin (4-7 versus 2-4). For other features, the Iberian and Greek species are quite similar : in both the size is less than 70 mm (Lozano Rey, 1947 ; Stephanidis, 1974) ; males exibit a similar colour pattern with usually 9-14 transverse stripes on sides ; in all fishes, around 30-50 % of the lateral-line scales (LL) lack pores ; the preferential habitat in both species is temperate freshwaters.

Meristic and colour pattern comparisons between the two valenciid species and *V. lozanoi* (Table I) confirm the finding of Fernandez *et al.* (1986) and the suggestion of Van der Zee (1988) that *V. lozanoi* is a junior synonym of *Fundulus heteroclitus* (Shute, 1978 ; Relyea, 1983).

Acknowledgements : We express our best thanks to I. Doadrio for sending specimens of *V. hispanica* from Valencia (now UMMZ, uncatalogued and IZA 8820), and of *V. lozanoi* from Cadiz (UMMZ uncatalogued and IZA 8821) (both are from type localities). The research work was supported by grants from MPI and CNR and

formed part of the program on "Componenti extrapaleartiche della fauna Italiana e Mediterranea".

REFERENCES

ARIAS A.M. & P. DRAKE, 1986. - Contribucion al conocimiento de la biologia de *Valencia hispanica* Val. 1846 (Pisces, Cyprinodontidae), en el SO iberico. *Inv. Pesq.*, 50 : 23-36.

BIANCO P.G., 1986. - The zoogeographic units of Italy and western balkans based on cyprinid species ranges (Pisces). *Biol. Gallo-Hellenica*, 12 : 291-299.

BIANCO P.G., 1987a. - Précision sur la distribution de *Cobitis taenia* et de *Valencia hispanica* dans les eaux douces d'Italie. *Cybium*, 11(2) : 207-212.

BIANCO P.G., 1987b. - La tolleranza alla salinità di *Valencia letourneuxi* e di *Pseudophoxinus stymphalicus* : spunto per delle riconsiderazioni sui meccanismi di dispersione dei pesci d'acqua dolce. V^e^ Congr. Naz. Ass. Ghigi, Pistoia (Abstract).

BIANCO P.G., 1990. - Some hypotheses on the origin of primary freshwater fishes in southern Europe. *Biol. Gallo-Hellenica* (in press).

COELHO M., GOMES J. & P.B. RE, 1976. - *Valencia hispanica*, a new fish to Portugal. *Arq. Mus. Bocage*, 25 (supl.) : 1-3.

DE SOSTOA A., DE SOSTOA F.J., LOBON-CERVIA J., ELVIRA B., HERNANDO J.A. & M. AVILA, 1984. - Atlas y distribucion de los peces de agua dulce de Espana : el proyecto, metodos y resultados preliminares. *Bol. Est. Cent. Ecol.*, 13 : 75-81.

FERNANDEZ D.C., HERNANDO J.A., HERRERA M. & M. BELLIDO, 1986. - Sobre el status taxonomico del genero *Valencia* Myers, 1928 en el suroeste de Iberia. *Doñana Acta Vert.*, 13 : 161-163.

GOMEZ F., PEIRO S. & S. SANCHEZ, 1984. - Descripcion de una nueva especie de pez continental Iberico *Valencia lozanoi* n. sp. *Bol. Est. Cent. Ecol.*, 13 : 67-74.

HERNANDO J.P., 1975. - Nuevas localidades de *Valencia hispanica* en el suroeste de Espana. *Doñana Acta Vert.*, 2 : 265-267.

LOZANO REY L., 1947. - Peces ganoides y fisòstomos. *Mem. Real Acad. Cienc.*, Madrid, 11 : 839 pp.

OLIVA O., 1965. - Zum Vorkommem von *Valencia hispanica* auf Korfu. *Bonn. Zool. Beitr.*, 16 : 308-315.

PARENTI L.R., 1981. - A phylogenetic and biogeographic analysis of Cyprinodontiform fishes. *Bull. Am. Mus. Nat. Hist.*, 168 : 341-557.

RELYEA K., 1983. - A systematic study of two species complexes of the genus *Fundulus*. *Bull. Fla. State. Mus. (Biol. Sci)*, 29 : 1-64.

SAUVAGE H.E., 1880. - Note sur quelques poissons recueillis par M. Letourneux en Epire, à Corfù et dans le Lac Mareotis. *Bull. Soc. Philom. Paris*, 4 : 211-215.

SHUTE J.R., 1978. - *Fundulus heteroclitus*. *In* : Atlas of North American freshwater fishes (D.E. Lee *et al.*, eds.), p 517 N. C. State Mus. Nat. Hist., Relaigh.

STEPHANIDIS A., 1939. - Poissons d'eau douce de la Grèce occidentale et de l'île de Corfu. Thèse, Athènes, 44 pp. (in Greek).

STEPHANIDIS A., 1971. - Poissons d'eau douce du Péloponnèse. *Biol. Gallo-Hellenica*, 3: 163-212.

STEPHANIDIS A., 1974. - On some fishes from the Ioniokorinthian region (W. Greece, etc.) - A new genus of Cyprinidae : *Tropidophoxinellus* n. gen. *Biol. Gallo-Hellenica*, 5 : 235-257.

STEINITZ H., 1951. On the distribution and evolution of the Cyprinodont fishes of the Mediterranean region and Near East. *Bonn. Zool. Beitr.*, 2 : 113-124.

VAN DER ZEE J.R., 1988. - Notes on the "Old World" killifish *Valencia lozanoi*. *Jour. Amer. Killifish Assoc.*, 21 : 16-25.

VILLWOCK W., SCHOLL A. & P. LABHART, 1982. - Die gattung *Valencia*, ein Beitrag zur Verbreitung und Taxonomie. *Mitt. hamb. zool. Mus. Inst.*, 79 : 273-280.

Reçu le 17-03-1989.
Accepté pour publication le 14-09-1989.